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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/575,225

04/07/2006

Tadashi Ogasawara

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EXAMINER

MCGUTHRY BANKS, TIMA MICHELE

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/575,225	<b>Applicant(s)</b> OGASAWARA ET AL.	
	<b>Examiner</b> TIMA M. MCGUTHRY-BANKS	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 July 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 8-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 8-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/29/08</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Status of Claims***

Claims 1-3, 5-18, and 21-23 are as originally filed, and Claims 4, 19 and 20 are currently amended.

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 2 and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claim 1, applicant claims that the Ca is returned along with the molten salt containing CaCl<sub>2</sub> in lines 13 and 14. If this molten salt is the same molten salt containing CaCl<sub>2</sub> that is held in line 3, there is no operating step for the CaCl<sub>2</sub> to leave the vessel. If this molten salt is the CaCl<sub>2</sub> produced as a by-product during the electrolysis step, then the claim should clearly distinguish this component.

***Claim Rejections - 35 USC § 102***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 17 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Bienvenu et al.

Bienvenu et al anticipates the claimed invention. Bienvenu et al is applied as discussed in the office action mailed 29 April 2008.

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

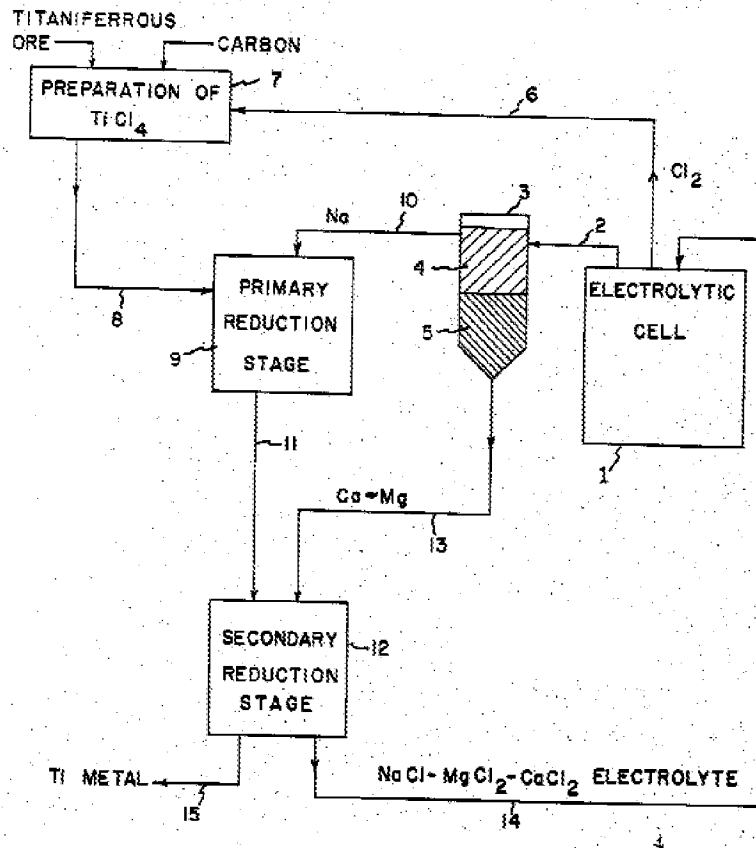
Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bienvenu et al as applied to Claim 1 above, further in view of Winter (US 2,890,112).

Bienvenu et al teaches the preparing of metals by reduction of their salts. The metal halide to be reduced was  $\text{TiCl}_4$  and the reducing metal was calcium in Example 1. A quantity of  $\text{CaCl}_2$  was poured into a reactor and a fused salt bath was formed at a temperature of 830 °C. Calcium was passed to the top of the reactor and dissolved in the bath.  $\text{TiCl}_4$  was fed and reduced by Ca. The lower half of the bath was withdrawn after reaction completion, and titanium powder was formed (column 4, line 62 to column 5, line 28). Regarding Claim 2, the salt can be a mixture of  $\text{CaCl}_2$  and NaCl (column 3, line 33). However, Bienvenu et al does not disclose discharging  $\text{CaCl}_2$  outside the reactor vessel or electrolyzing  $\text{CaCl}_2$  and generating Ca

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by the electrolysis for the generation reaction of Ti or the Ti alloy in the reactor vessel as in

Claim 1. Winter teaches producing titanium metal as shown below in the Figure:



It would have been obvious to one of ordinary skill in the art at the time the invention was made to recover Ca from the  $CaCl_2$  produced in the process of Bienvenu et al as taught by Winter, since Winter teaches utilizing by-products to produce a magnesium-calcium alloy for use in the reduction for use in the reduction of a metal halide reactant, specifically titanium metal and alloys thereof (column 1, lines 60-67). Winter also teaches that it is well known in the art to chemically and/or electrically recover the by-product halide salt obtained from the reduction to recover reducing metal and halogen values present therein (column 1, lines 23-26). Though Bienvenu et al teaches as a secondary feature generating calcium from calcium carbide in

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column 2, lines 21-32), this does not teach away from the combining the teachings of Bienvenu et al with those of Winter.

Claims 8-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bienvenu et al in view of Winter.

Bienvenu et al in view of Winter is applied as discussed in the office action mailed 29 April 2008.

Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bienvenu et al as applied to claim 17 above, and further in view of Winter.

Bienvenu et al in view of Winter is applied as discussed in the office action mailed 29 April 2008.

Claims 18, 19 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bienvenu et al in view of Winter.

Bienvenu et al in view of Winter is applied as discussed in the office action mailed 29 April 2008.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

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A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 8-10, 17, 21, 22 and 24 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 2 of copending Application No. 11/992,162. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims as presented do not claim wherein the molten salt increased in Ca concentration through the use of a principal electrolyzer in said electrolysis step is introduced into a regulating cell having a Ca supply source as in Claim 1 of Application No. '162. Regarding Claim 17, though Application No. '162 does not claim that the concentration of Ca is greater than 0 mass %, it is inherent that the claims Application No. '162 read on a mass % of greater than 0 since Ca is present.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1, 8-10, 17, 21, 22 and 24 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 13 of copending Application No. 11/991,072. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims as presented do not claim increasing the Ca concentration. Regarding Claim 17, though Application No. '162 does not claim that the concentration of Ca is greater than 0 mass %, it is inherent that the claims Application No. '162 read on a mass % of greater than 0 since Ca is present.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1, 8-10, 17, 21, 22 and 24 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 10/589,879. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims do not claim generating Ca on a cathode electrode. Regarding Claim 17, though Application No. '162 does not claim that the concentration of Ca is greater than 0 mass %, it is inherent that the claims Application No. '162 read on a mass % of greater than 0 since Ca is present.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1, 8-11, 14, 17, 18, and 21-24 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-7, 11 and 12 of copending Application No. 10/589,949. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims as presented do not claim generating Ca on a cathode electrode side by the electrolysis as in Claims 1-4, 6, 11 and 12, the reactor cell configuration as in Claim 1, the molten salt comprising KCl, LiCl or CaF<sub>2</sub> as in Claim 6, or the size of the Ti or Ti alloys as in Claim 12.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 8-12, 17, 21, and 22 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 8, 10, 17, 19 and 21 of



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compending Application No. 10/575,224. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims as presented do not claim an alloy electrode made of a molten Ca alloy that employed for a cathode as claimed.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1, 2, 8, 11, 12, 13, 15, 17-19 and 22-24 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 3, 4-7, and 11-13 of compending Application No. 10/590,863. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims as presented do not claim a Ca generation step by Na introduction, in which Ca is generated by introducing Na into molten salt containing  $\text{CaCl}_2$  as claimed.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claims 1, 2 and 24 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-7 of compending Application No. 10/575,224. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

### ***Response to Arguments***

Applicant's arguments filed 29 July 2008 have been fully considered but they are not persuasive. Applicant argues that the teachings of Bienvenu and Winter are fundamentally different because Bienvenu teaches a one-step process and Winter teaches a two-step process. However, Winter teaches discharging and electrolyzing at the second step, which is substantially the same step taught by Bienvenu. That Winter has a prior step does not take away from the combinability. C and  $\text{CaCl}_2$  are returned to a reduction step that reads on the reduction step for Bienvenu and that of Claim 1. Regarding returning  $\text{CaCl}_2$ , the examiner notes that Winter does not teach returning any excess/unreacted  $\text{CaCl}_2$  from the electrolytic cell for reduction. Regarding the claim limitation that the reaction of metallic chloride of Ca is taught by Winter in the figure, which is further described in column 2, line 45 to column 3, line 15. Regarding the inherency argument, the presence of Ca must result in a concentration of greater than 0%. Factual support of a value being greater than zero is based on basic mathematical concepts and the well-known and accepted definition of zero. The examiner also notes that the applicants do not discuss the merits of the double patenting rejections.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIMA M. MCGUTHRY-BANKS whose telephone number is (571)272-2744. The examiner can normally be reached on M-F 7:00 am - 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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8 October 2008